MULTIMEDIA UNIVERSITY

STUDENT IDENTIFICATION NO

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FINAL EXAMINATION

T1, 2019/ 2020

BOM7094 – OPERATIONS MANAGEMENT

(All Sections/ Groups)

27 SEPTEMBER 2019
9.00 a.m – 12.00 p.m
(3 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consist of **SIX (6)** pages (including the cover page).

2. Answer **ALL** questions. The marks distributions are given in parentheses.

3. Write all your answers in the **Answer Booklet** provided.

All questions carry equal marks. **(5x20=100 marks)**

Question 1

a. Read the following case and answer the following question.

IKEA'S FIRST STORE IN INDIA IS A CASE STUDY FOR INTERNATIONAL RETAILERS

IKEA, the world's largest furniture retailer, is betting that millions of middle and upper-class Indians are similar to the Lambas. Six years after it was first planned, the 400,000 square foot store in Hyderabad is the first step towards fulfilling Ikea's ambitions in the country, with more outlets scheduled to debut in Mumbai, Bangalore and the Delhi area in the next two years. By 2025, the company hopes to have 25 stores in India, some of them in a new, small format.

Ikea's opening in India – and its subsequent success or failure – is likely to become a case study for other international retailers. India's retail landscape is complex. With a growing middle class, its 1.3 billion people buy about $30bn (£23bn) a year of furniture, lighting and household items like bed linens and cookware, according to Technopak, an Indian consulting firm. But despite the efforts of a few local chains, 95 per cent of those goods are sold through small shops that offer custom-built products, usually specialising in one category such as wooden furniture or lamps, and free assembly and delivery.

"The consumer in India is kind of pampered," says Ankur Bisen, who heads Technopak's retail and consumer products division. Ikea stores are the polar opposite. Ikea's brand signals affordable, mass-produced and functional, and its design aesthetic is lightweight and lean, in contrast to the heavier, bulkier furniture traditionally favoured in Indian households. Yet Ikea, with its reputation for good value, also appeals to the bargain-hunting nature of the Indian shopper.

Given India's lower income levels, the store features hundreds of products – from dolls to spice jars – priced at less than 100 rupees. In some cases, Ikea is selling a product in India for less than it charges elsewhere. In other instances, the company is tailoring it for local tastes. For example, most Indians do not use knives to eat and primarily want spoons, so the company ditched its children's plastic cutlery packs and instead sells four spoons for 15 rupees. Ikea employees also visited about 1,000 homes in various cities to understand how people lived and what they needed. Indian families spend a lot of time together, with relatives frequently popping in, so the company added more folding chairs and stools that could serve as flexible seating.

Indian women are also shorter than Europeans and Americans, so the company decided to showcase some cabinets and countertops at lower heights. And with children often sleeping in the same room as their parents until they are in elementary school, its model bedroom squeezes in a child's bed amid all the other furniture.

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"We want to be as relevant as possible," says Nick Elliott, an Australian who heads interior design for Ikea's Hyderabad store. Even the cafeteria caters to Indian tastes, with biryani, samosas and vegetarian Swedish meatballs on the menu and 1,000 available seats, more than any other Ikea in the world, to accommodate the more leisurely dining style of Indian families.

Figuring out how to adapt Ikea's furniture was more difficult. Some items popular in the United States, such as untreated pine furniture, do not endure in south India's hot and humid climate. Metal or wooden furniture needs small risers to lift it off the floor because people frequently clean their floors with water.

How do the operations strategies adopted by Ikea help it to achieve its competitiveness?
(10 marks)

b. IKEA DESIGNER, David, was asked to produce a unique object that could defeat the darkness in homes across the planet, bringing light and hope to the many. The result was the IKEA PS Pendant lamp: A planet-like lighting fixture that 'explodes' at the pull of a string, spilling warm, glorious light across surrounding spaces.
The lamp has gone on to win fans across the world as well as a prestigious Red Dot design award. David confides that he used IKEA's own version of 'The Force' during the long and challenging design process. "At IKEA we have an approach called Democratic Design, where every product we make needs to succeed in terms of form, function, sustainability, quality and price," he says. "It's a way of ensuring that we bring high-quality design to the many."

Discuss the five requirements of Democratic Design with respect to IKEA products.
(10 marks)

Question 2

a. There are certain characteristics that distinguish a good restaurant from an average one. Such qualities help keep a good restaurant's tables filled with satisfied customers. If your small business owns a restaurant, understanding some of the qualities it should have will increase its chances of creating repeat business and consistent profits. Discuss in what ways you can improve quality in your operations.
(10 marks)

b. Location analytics uses the locational component of business data to improve users' understanding of their market, customers, and business processes. Organizations throughout the world use location analytics to make better decisions and gain a competitive advantage.

Why is location important to companies? Discuss the importance with two examples.
(10 marks)

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Question 3

a. Problems began for Nike in 1991 with reports about poor working conditions at the Nike factories in Indonesia. At this time, Nike's response was to deny responsibility for monitoring malpractice for suppliers. Nike became a target of campaigners, and because of this a global boycott began. This campaign quickly caught wind and had a significant impact on the Nike's demand.

It wasn't until 1996 that Nike finally started addressing the issue in a productive manner. They began by putting a department in place tasked solely with improving the lives of factory workers. Nike started progressing as a company in their efforts towards CSR.
However, unrelenting criticism was still taking a toll on their brand image. In 1998, Nike finally began to see positive feedback. Their CEO at the time gave a speech announcing big changes in working standards. Shortly after this, Nike began the creation of the Fair Labor Association to help improve their operations. Then, they started regular factory audits and publishing detailed factory info.
Nike took responsibility for the monitoring of the operations within every link of their supply chain. Moreover, they were able to provide visibility to consumers. As a result, Nike made a comeback from a potentially disastrous situation to restore their public image.

What do you learn from this Nike scenario on supply chain?

(10 marks)

b. Over one hundred members of staff and faculty of Singapore Management University gathered on 7 February 2018 for the annual SMU Business Excellence Awards which celebrated how schools, offices, institutes and teams across the university have, through major and minor improvements, made a positive difference to learning and work.

"Through our collective efforts to review and revise work, we have saved $275,000, generated revenues of more than $38,000, reduced processing errors by 68 percent, and freed up more than 2,700 staff hours", said Lim Wee Pin, Director at the Office of Business Improvement (OBI) -- the office which administers the Awards.

How did the SMU achieve this? Discuss the Operations Management domain in this short notes.

(10 marks)

Continued..

Question 4

a. The aim of Statistical Process Control (SPC) is to establish a controlled manufacturing process by the use of statistical techniques to reduce process variation. A steel rod manufacturing company wants to ensure the quality compliance with 99.75%. To check the process control, it randomly picks up 7 samples each day for 10 consecutive days. The average length of the rod and the range for each day is given in the table. Do the SPC analysis and inform the company whether the process is in control or not. In addition, also inform the company about the distribution of points in the charts.

Day	x-bar	R
1	5.84	0.88
2	5.73	0.76
3	4.82	0.65
4	5.11	0.54
5	5.68	0.43
6	5.76	0.32
7	5.75	0.45
8	5.96	0.56
9	4.35	0.67
10	5.66	0.78

($A_2 = 0.42$, $D_3 = 0.08$ and $D_4 = 1.92$)

(10 marks)

b. Exponential smoothing is a time series forecasting method for univariate data that can be extended to support data with a systematic trend or seasonal component. Exponential smoothing forecasting model was used to forecast demand for a product. The forecasts were done using $\alpha = 0.33$ and $\alpha = 0.73$. Use MAD and MSE to evaluate the accuracy of the forecasting model.

(10 marks)

Continued..

		α=0.33	α=0.73
Month	Demand	Forecast	Forecast
Jan	455	455.00	455.00
Feb	423	455.00	455.00
Mar	411	444.44	431.64
Apr	487	433.40	416.57
May	466	451.09	467.98
Jun	498	456.01	466.54
Jul	512	469.87	489.50
Aug	478	483.77	505.93
Sep	488	481.87	485.54
Oct	468	483.89	487.34
Nov	495	478.65	473.22
Dec	500	484.04	489.12

Question 5

a. Race One Motors is an Indonesian car manufacturer. At its largest manufacturing facility in Jakarta, the company produces sub-components at a rate of 55 per day, and it uses these sub-components at a rate of 12500 per year (of 250 working days). Holding costs are RM25 per item per year and ordering cost are RM40 per order

   a. What is the economic production quantity?

   (4 marks)

   b. How many production runs per year will be made?

   (2 marks)

   c. What will be the maximum inventory level?

   (2 marks)

   d. What is the annual cost of ordering and holding inventory?

   (2 marks)

b. As vice president of manufacturing within your company, you want to increase your capacity to support the newly implemented sales and operations planning (S&OP) process that has stressed your production scheduling and flexibility trying to meet demand. Over the last quarter, these issues have led to poor customer satisfaction, and you have lost some key customer accounts. In order to meet your business goals, you need to make some significant operational changes.

   In this scenario, what will be your decision and why?

   (10 marks)

End of Paper